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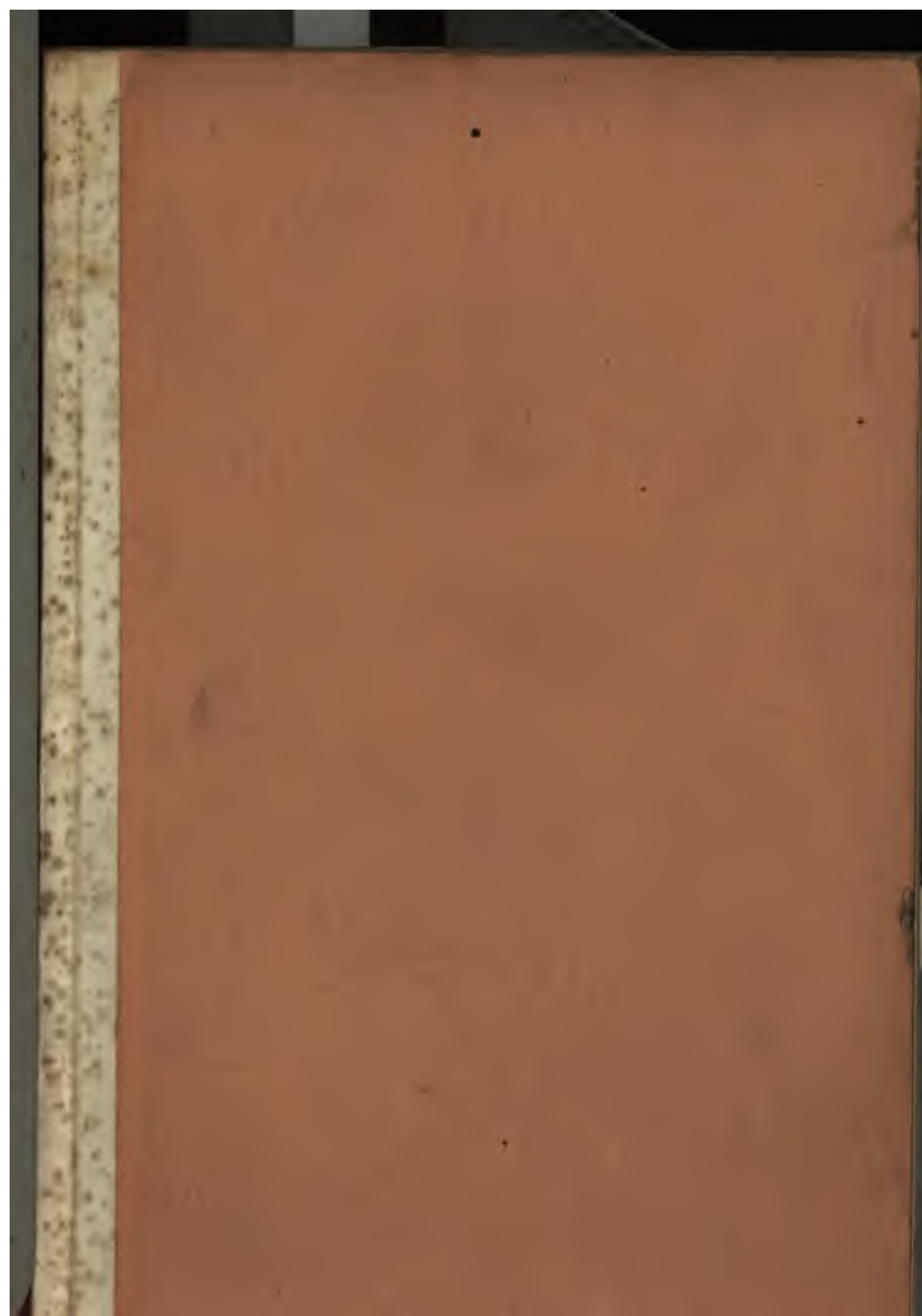
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EXPERIMENTS
WITH
EXHAUST VENTILATORS

AT THE
HEALTH EXHIBITION,
LONDON, 1884.

A PROTEST.

LONDON:
ROBERT BOYLE & SON, 64 HOLBORN VIADUCT, E.C.
GLASGOW: 110 BOTHWELL STREET.
1884.



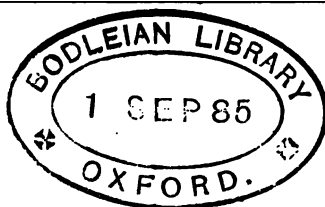


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P R E F A C E.

As the matter referred to in these pages is one that affects the interests of not only the exhibitors of exhaust ventilators at the late Health Exhibition, but the public as well, we have considered it advisable to put it on record in the form in which it is now presented.

It is much to be regretted that proceedings of the nature of those herein described should ever occur, as they not only convert that branch of sanitary science into "a subject for derision," as so truly expressed by the *Architect*, but they tend to bring into discredit with the public all who are practically identified with it, and the efforts of really earnest men to popularise the cause to be received with a sceptical indifference, which must certainly have the effect of retarding the advance of sanitary science and inflicting upon it a serious injury.

We are far from imputing that Mr. D. K. Clark, the testing engineer, is solely responsible for what has happened. He, doubtless, was considerably influenced in determining the mode of testing by the suggestions of those members of the jury who esteemed themselves authorities on the subject—Mr. John P. Seddon, architect, being one of the most prominent, and who we all know, on occasions of this kind, is always "happy to oblige" and to let the world have the benefit of his carefully thought-out theories. It is evident, in this instance at least, that the practical application of those theories has not been quite so "happy" as probably Mr. Seddon and the gentlemen associated with him in the testing anticipated; but it has afforded the public an opportunity of judging, from the results of their labours, of the value to be attached to the said theories and the reliance that is to be placed in those who propound them.

R. B. & S.

8th December, 1884.

INTRODUCTORY.

The following correspondence appeared in the columns of the *Architect*, calling in question the mode of testing the exhaust ventilators at the late Health Exhibition and as a protest from those exhibitors who were not invited to participate in the testing, also from those who considered their ventilators unfairly tested.

“ARCHITECT,” Nov. 8.

AWARDS FOR VENTILATORS AT THE HEALTH EXHIBITION.

To the Editor of the “Architect.”

SIR,—As we are informed that a *select* number of ventilators have been tested by the jury on ventilation, at the late Health Exhibition, for the purpose of assisting them in adjudicating the awards, we beg to state that we knew nothing of these tests until they were completed, nor was our air-pump ventilator included amongst those tested. It appears that our ventilator was not the only one excluded, as several other exhibitors of ventilators were also not invited to submit their ventilators to the tests. Now, it would be interesting to know *why* so many ventilators, ours amongst the number, were excluded from these tests, seeing that they were all sent to the exhibition for the purpose of competing for prizes.

We are afraid the jury have got themselves into a scrape they will have some difficulty in getting out of, for they may depend upon it that the matter will not be allowed to drop until it has been sifted to the bottom, and the individual or individuals responsible for these most extraordinary and unfair proceedings made to account for their conduct.

We understand that the method of making the tests was a farce, the ventilators being placed inside a tube about 8 feet long by 3 feet square, and a blast of air driven on to them by means of a fan: the bottoms of the pipes attached to the ventilators were also inside the tube. It is scarcely credible that such gross ignorance amongst professed scientific men could exist in this the nineteenth century.

Perhaps it may account for why we have been treated as we have,

when it is mentioned that our old friend and well-wisher, Mr. J. P. Seddon, formed one of the jury.

Yours truly,

ROBERT BOYLE & SONS.

64 Holborn Viaduct,
Nov. 4, 1884.

Mr. D. K. Clark, the testing engineer, replied stating that we had not been excluded from the testing, that we had been formally invited to send our ventilator, and that he held a letter from us declining to comply. A Mr. Banner also replied approving of the mode of testing and generally asserting his ventilator to be as good as the air-pump ventilator. Our replies will be found on pages 4, 5, 6, 7, and 8. A letter also appeared in the same number of the *Architect* from Mr. Geo. W. Webb, Architect, Reading, corroborating our statements *re* the mode of testing and rehearsing his own experiences—see page 3.

“ARCHITECT,” Nov. 15.

SIR,—Like Messrs. Boyle, I received no notice to produce a ventilator for trial, and it was only a short time before the trials took place that I heard a rumour about the matter.

Being very much interested in the subject I made inquiries as to where the trials were to take place, and, after some trouble, and greatly to my astonishment, I found the place to be a back room on the first floor of a partly-finished house, viz., 9 Moreton Gardens, Brompton. There I saw the selected ventilators—they were of all sizes. (One which has received a medal was a huge affair, about 6 feet high and 4 feet wide; also two or three monstrous cowls nearly as high as the room, and others varying in size down to about 8 inches, so that under whatever circumstances the trial took place, I utterly fail to see how the small ventilators could compete on terms of equality with the huge monsters pitted against them.

I saw the large wooden tube arrangement, fan, etc., as described by Messrs. Boyle. The fan was driven by *hand* power, and of course the velocity of the blast could not be equal, but could be varied to any extent, and the whole thing appeared to me to be a perfect farce.

* * * *

It is well known that many ventilators will not act properly when exposed to an open air test such as I have suggested, fog, rain, and dense atmosphere being so prevalent in this country that unless a ventilator will act during all atmospheric changes of the weather it is practically useless, and I fully expected that a most exhaustive trial would have taken place to thoroughly test the respective merits of the various ventilators exhibited.

I received a notice to meet the jury, and went up to town four times for that purpose, but on each occasion they failed to pay me a visit. I think it is, to say the least, an error of judgment on their part in not sending a notice to each exhibitor to produce a ventilator for testing purposes, and, in fairness to the exhibitors, the awards in Class 25 should be readjusted, as there are several very meritorious exhibits entirely ignored.

Yours very truly,

GEO. W. WEBB.

1 Blgrave Street, Reading,
November 10, 1884.

"ARCHITECT," Nov. 22.

SIR,—In reply to Mr. Clark's letter *re* the above, which appears in your current issue, we have only to repeat that we were *not* invited to send our air-pump ventilator, which is the only exhaust ventilator we either manufacture or sell, for the purpose of being tested, nor were we notified that tests were being made with exhaust ventilators; we, as already stated, not being even aware that such tests were instituted until after they were completed and the awards made. Under these circumstances it seems rather superfluous for Mr. Clark to say that we were *not* excluded from the testing, seeing that we—why, we cannot understand, though we mean to find out—were left in entire ignorance of the existence of such tests. Mr. Clark states that we were invited in *proper* form to send our ventilator to be tested, and also that he holds a letter from us declining to comply with his request. As this is really a matter of not only private but public interest, we now call upon Mr. Clark to publish the letter referred to, so that your readers may be enabled to judge between us, and that we may have the opportunity of showing how we have been treated.

With respect to our error in the length of the testing tube, stating that it was eight feet, whereas Mr. Clark informs us it was ten feet long, this additional length instead of improving the position shows all the more conclusively that the mode of testing was a *farce*, and we are prepared to argue this point with Mr. Clark either as a question of science or practice, or as both, and to prove the correctness of our assertions, which we make as practical men of extended experience. From the accounts we have since read of the experiments, and the manner in which they were conducted, we much fear that they will have the effect of bringing sanitary science into discredit with the public, and do it almost as great an injury as the notorious "Kew experiments," which is greatly to be regretted, as it retards and hampers the efforts which earnest and practical men are now making to popularise the cause amongst the people.

We derived the information from a credible source that the shafts of the ventilators tested were *inside* the tube, but as Mr. Clark affirms, and we have no knowledge of ourselves to the contrary, that such was not the case, we will concede the point, which does not affect materially the method of testing the ventilators.

As we in the whole course of our experience as ventilating engineers have never heard mention of Mr. Clark as an authority on ventilation, it might, as indicating the value to be attached to that gentleman's labours, be satisfactory to your readers, as it certainly would be to us, to be informed of his qualifications to decide a question relating to ventilation in such an offhand manner, which has hitherto baffled the most scientific and practical experts on the subject, viz., the determining by *scientific experiment* the relative values of ventilating cowls. We would strongly recommend Mr. Clark, and all others who feel inclined to dabble in such experiments (?), to carefully read and digest the article on "Cowl Testing" which appeared in your issue of the 1st inst., and if they then do not see the fallacy of their attempts to solve what is practically as difficult a problem as squaring the circle, we fear their case is hopeless.

Mr. Clark stigmatises part of our letter as "abusive." If stating that we will not allow this matter to drop until we have sifted it to the bottom and discovered the individual or individuals really to blame is "abuse," then we admit the impeachment; or if our remark that the experiments in question are a reflection on the intelligence of the nineteenth century be considered "abuse," then we again admit the impeachment.

In view of Mr. Clark replying to this letter, we beg to ask him one question, and that is, if Mr. J. P. Seddon, architect, who, we are informed by the secretary to the juries, formed one of the jury on ventilation, is a friend of his, or if he is personally acquainted with that gentleman? Your readers will doubtless comprehend our reasons for asking this question.

As we presume we may look upon Mr. Clark's letter as a final reply, so far as the jury are concerned, to our letter of protest addressed to Sir Philip Cunliffe-Owen in his capacity of official representative of the jury, and receipt of which that gentleman duly acknowledged, we herewith beg to append that letter as showing how the matter stands.

Queen Anne's Buildings, 64 Holborn Viaduct,
London, E.C. : Nov. 4, 1884.

*To Sir Philip Cunliffe-Owen, Secretary to the late Health Exhibition,
South Kensington.*

DEAR SIR,—We are informed, and for the first time, that the exhaust-ventilators exhibited at the late Health Exhibition, South Kensington, have been submitted by the jury to a series of tests, with the view of ascertaining which was the best and entitled to the first prize. As we received no notification that such tests were going to be made, nor were invited to submit our self-acting air-pump ventilator, exhibited at the Health Exhibition, for the purpose of being tested along with the others, we beg to ask you, as the representative of the jury, for an explanation of the omission, and the reason for our ventilator being excluded.

We have also to ask you if it is correct that Mr. J. P. Seddon, architect, formed one of the jury on ventilation, and that five medals have been awarded to the ventilating and sanitary appliances of a firm which that gentleman has been the public advocate of for these last seven years, he being also well known to be strongly antagonistic to us personally and to our ventilating arrangements?

During the time of the exhibition we repeatedly attempted to ascertain the names of the jury; but, for reasons best known to that body, none of their names were allowed to be divulged—an unprecedented proceeding and entirely contrary to the recognised rules which control all exhibition juries. We beg to remark, however, that in England men do not submit to be condemned by secret tribunals without even having been brought to trial, as is the case with us in the present instance.

We would also like to know why the jury have awarded us a silver medal for an appliance which we did not exhibit at all, namely, our system of ventilation for drains? The limited space granted us prevented us from doing so.

We beg also to ask if the official list of awards, as published in the *London Gazette*, correctly represents the value and number of the prizes awarded to each exhibitor, as we observe a paragraph in this week's issue of the *Building News* which states that Mr W. P. Buchan, a plumber in Glasgow, has been awarded a gold medal, whereas in the list he is shown as having only received a second prize (silver medal) for traps, and the lowest prize (bronze medal) for ventilators?

Enclosing a pamphlet containing the notorious Seddon correspondence re the application of our system of ventilation to the London Custom House, and hoping to be favoured with an early reply to the foregoing queries,

We have the honour to be,

Your obedient servants,

(Signed) ROBERT BOYLE & SON.

P.S.—We beg formally to protest against the awards given for ventilators, on the grounds that our self-acting air-pump ventilator was not tested, and that we were not invited to submit it for the purpose of being tested along with the others, and that therefore the awards given do not show that the ventilators receiving them were justly entitled to them.

R. B. & S.

As it is evident, from the position Mr. Clark has taken up, that the above letter has failed in its purpose, and that we may expect but scant satisfaction at the hands of the gentlemen—whoever they may be—who formed the jury, we will now appeal to the executive through its head, His Grace the Duke of Buckingham.

We are, yours truly,

ROBERT BOYLE & SON.

64 Holborn Viaduct, Nov. 22, 1884.

"ARCHITECT," Nov. 22.

Our letter to Mr. Clark will be a partial reply to Mr. Banner's, which appears in your current issue. We have now to say that, had we known at the time that Mr. J. P. Seddon formed one of the jury on ventilation, we should have lodged a formal protest against his acting in that capacity, on the grounds that he was declaredly antagonistic to us, and that he was also the advocate of another system of ventilation (Mr. Banner's), upon which he would also have to adjudicate. Had we been invited to send our air-pump ventilator for the purpose of being tested, which we were not, and had we been aware that Mr. Seddon was one of the jury, we should most certainly have declined; and it has yet to be explained why the names of the jurors were kept so strictly secret in spite of all our attempts to ascertain them.

With respect to the value of the tests, we have already, through the medium of your columns, expressed our opinion, and that opinion we not only maintain but are prepared to prove is correct. As to the efficiency of Mr. Banner's or any other ventilator as compared with the air-pump ventilator, there is no surer or more crucial test than the test of time, and no better judge than the public. It is not for us to boast of how long our ventilators have now been in use, nor of the number of buildings, public and private in almost every country in the world, which we have successfully ventilated, nor of the almost incredibly large number of ventilators which we have sold during the last fourteen years. The fact that they are known and extensively used in every quarter of the globe is in itself, we think any reasonable and unbiassed person will admit, sufficient proof that the air-pump ventilators have been found to satisfactorily answer their purpose, or they would not have been so generally adopted. But that is not all. We recently made an appeal to the principal architects in the United Kingdom, to be favoured with their experiences of our ventilating appliances, and we received, in *immediate response*, over four hundred most valuable testimonials, amongst which are to be found the names of almost every leading architect in the kingdom. We humbly think that the testimony of gentlemen who all speak from extended practical experience, such as Mr. Arthur W. Blomfield, Mr. Arthur Cates, the late Sir Gilbert Scott, Sir William Thomson, Dr. B. W. Richardson, the late Professor Macquorn Rankin, &c., &c., will have a little more weight with the public than the pottering experiments of a few amateurs whose ideas on the subject are possibly as vague as their practical knowledge is limited. Mr. Banner is simply making a farce of a serious matter when he again offers his bellicose challenge to "single combat" for £100 a-side, &c., &c. Considering that he has now offered this challenge to almost every ventilator maker in the country, and we believe has been also himself challenged, we should have thought that by this time he would have seen the folly of his conduct, and *the ridicule he was bringing on the cause of sanitary science by his*

treatment of it as if it were the "prize ring." If Mr. Banner, who, we believe, notwithstanding his pugilistic predilections, to be in his capacity as a city merchant a most estimable gentleman, and who must have spent a great deal of money in the indulgence of his hobby, is so very desirous that his name should be handed down to posterity as one of the great sanitary reformers of the present age, let him, instead of giving away his £100 in the way he proposes, expend it in applying his system of ventilation gratuitously to one of our city hospitals or homes, and then invite his friends and the press to witness what he has done. We can assure him that, if he does this, he will accomplish his desire, and at the same time have done a good deed, which will be doubly satisfactory. With respect to Mr. Banner's latest challenge, we have only one thing to say to him in the meantime, and that is to adopt our recommendation to Mr. Clark, and carefully read and digest the article on "Cowl Testing" which appeared in your issue of the 1st inst. If, after reading that he should still remain in the same frame of mind as he is at present, we will then, with a clear conscience, be in a position to reply further to him.

We are, yours truly,

ROBERT BOYLE & SON.

64 Holborn Viaduct, Nov. 15, 1884.

Up to date (December 8) neither Mr. Clark nor Mr. Banner have replied to these letters.

"ARCHITECT," Nov. 22.

SIR,—Will you spare us a small space for once in your journal in order that we may point out the statements that are likely, unless contradicted, to mislead your many readers, made by Messrs. Banner Brothers & Co., in their letter in *The Architect*, November 15, 1884, pages 324-325, and also to refute their assertions on some other points outside the question of the testing invitations.

We, in short, emphatically deny having any notice or communication from anyone in authority that such test was about to take place, nor did we know anything of it at all until one gentleman, a competitor, came to us. Two questions require answering on this point: first, how is it we were omitted? Considering the exhibit we had (the only one in the whole exhibition which showed ventilation in its practical form) we are making inquiries at headquarters into the matter, and we hope to have explained to us, and to our satisfaction, the cause of such treatment. Can it be said our exhibit was no compliment to the International Health Exhibition, and no notice was required? If so, we must appeal to some of the many who honoured us with their visits, not omitting gentlemen members of the press. Secondly, were Messrs. Banner Bros. assured by anyone in authority that invitations had been sent to all exhibitors to contest? If that is a fact, as stated by them, we not only contradict that assurance, but challenge the truth of it. Therefore

it is clear on the face of it Messrs. Banner Bros. have said more than they were justified in doing, or they have been misinformed. Having laid our case before a gentleman of authority and unremitting energy, we wait with patience his report.

As Messrs. Banner Bros. have called into question the opinion of all ventilator makers, we suppose we must come under that distinguished title. As to the tests, we do not give our opinion in favour of them. We believe that a greater farce was never committed by anyone who took upon himself to act in such a capacity, and if Messrs. Banner Bros. are the great authorities in ventilation they assume, surely they must confess their ventilator, with the elaborate construction and working parts, cannot be of much account, considering they were beaten by at least two, with no working parts at all, the one a chimney-top, the other a simple 9-inch tube, with two cones outside for the wind or air to act upon, which could have no effect when tested, for the reason that the testing was carried out in a room; and we give it as our unbiassed opinion, under such circumstances, no other result could have been expected, and we will now give in detail a few remarks in justification of our opinion, and leave them to be contradicted by anyone who is able.

All fixed or rotating cowl or ventilators are represented as being automatic. If a visit is made to Messrs. Banner Bros.' stand, and an explanation is asked, it will be the wind or air acts so and so, which causes the ventilator to act so and so. Take the one that claims the highest award for fixed or roof ventilators (the silver medal), because the maker asserts that the winner of the gold medal obtained it for an Albert chimney-top. His is a plain, open tube, with cones outside for the wind to play upon, causing an induced current. This is his exact description when explaining it, and so it is with every one. Atmospheric agency is what is relied upon. At any rate, so it is declared by the recipients of awards. Take the system applied in the testing, called the correct one, and see if the atmosphere had anything to do with the merits of the ventilators so fortunate. We say it had not, and, scientifically, we shall be contradicted, for the reason that all the results were brought about by a forced current. Thus, it is quite clear that Messrs. Banners' cowl would be better without any parts at all except the repeat shaft. If their judgment is correct as to the method of testing, could the result be otherwise? Take, for instance, a 9-inch tube, with 500 cube feet of air being forced through it every minute; take another, with the same amount of pressure, place a straw or anything else that occupies space, and the result must be different; hence it is, What value is there in fittings or appliances to a ventilator, against one without any, particularly under such a method of testing as before named? If Messrs. Banner Bros. are right, and we are wrong, the ventilating engineering profession will seem to be a thing of the past, as any one can have a perfect ventilator by taking an old hat with the crown out. What is to beat it? There you have a clear circumference the size of the hat, and no obstruction to the forced current by any internal appliances that are so frequently (and not

without profit) used. We could most unquestionably give many other reasons why we differ from Messrs. Banner Bros., and also why we consider the test so applied does not give the relative merits of a ventilator, and the result of such tests are calculated to seriously mislead the public, who have had no opportunity of seeing the various ventilators that are in the market, and more especially because the testing was carried out by an authority connected with the International Health Exhibition of 1884. Considering the importance of the exhibition, the benefit that not only exhibitors but the outside world expected to derive from the exhibits and the verdict of the judges, they should have been such as to have given reasonable satisfaction. If Messrs. Banner Bros. are correct in stating that Messrs. Robert Boyle & Son were invited, and there is documentary evidence to prove it, and Messrs. Robert Boyle & Son publicly declare they had not an invitation, we ourselves declare we had no invitation. Messrs. Banner Bros. inquired—and we suppose of the proper authorities—if all had been invited, and were assured they had. It is for your readers to be informed where this tremendous discrepancy lies. As far as we are concerned, we hope Messrs. Banner Bros. rather misunderstood the reply to their inquiries. If not, a responsibility rests upon someone, who will best vindicate their actions by an announcement open to your readers. We hope you will excuse the length of our letter, and favour us with space for the purpose of setting forth a true state of the case as far as we are concerned.

Yours truly,

E. A. & SONS.

“ARCHITECT,” Nov. 22.

SIR,—I beg to express my regret that there should have been any reason for Messrs. Robert Boyle & Son writing as they do. They complain of not being asked to send in their ventilator to be tested along with the “select” number that have been tested. Now I complain of being put to the expense of sending one of my ventilators all the way from Glasgow specially to be tested, and of no proper testing being made. This is not the first time I have made this complaint; however, as owing to being up in London at the Plumbers’ Congress at the International Health Exhibition on October 20th, I called at the room where the “testing” was being made on the morning of the 21st ult., and from what I saw I considered the mode of testing quite useless, and therefore wrote a letter that same evening objecting to the tests, which letter was received by the secretary of the exhibition on October 23rd, some days before the awards were published, and before I knew how my ventilator exhibits were to be judged.

The pseudo-testing of the ventilators, so far as I saw, was made in a (for the purpose) small room 12 feet high and about 22 feet long and 18 feet wide, with window extending fully 3 feet further. For testing, two fans were used with 8½-inch diameter outlets, each being

worked by a man turning a handle or crank, just as if turning a grindstone. These fans were set on a table several feet above the floor, and delivered the air from them into a wooden tube 10 feet long, the nearest end of tube to fans being about 3 feet back from fans, which caused the other end of the tube to be only about 5 feet distant from the solid wall. The tube was nearly square in section at end next the fans, being 3 feet high and 2 feet 6 inches wide. At the end furthest from the fans the tube was 5 feet high.

The ventilator being tested rested on the bottom of the wooden tube, which latter had a hole cut in its bottom below the pipe of the ventilator, to allow the air in and the application of the anemometer. The size of the tube was much too small, while its distance from the solid wall was far too little. Instead of only being five feet from the wall, it should have been about five times five. As it was, the artificial wind could not get forwards to the front of my ventilator, but was deflected off at each side and also over the top. The volume of wind produced by the fans was too little, and the size of wind tube too little also for my 22-inch ventilator.

We were asked to send in a ventilator for a 9-inch pipe, without any information as to how the testing was to be made, &c., and I concluded to let my 22-inch one take its chance.

With the testing, as conducted, I would have had a better chance with a small 15-inch ventilator and a tapered pipe than a 22-inch one. One might as well set a six-days' Atlantic liner to run a race with a tug-boat in a farmer's duck-pond as test one of my 22-inch ventilators in a small room, as above described.

It would be very interesting to know the comparative results given with the above style of testing, as then any two "tested" in the room could now be properly tested by exposure to the wind above a roof. I intend to have this done with Messrs. Banner & Kite's as soon as I can manage it, and publish the results. At the same time, I consider that injustice has been done to all the exhibitors of ventilators by the testing being attempted—I cannot say carried out—as described, while the public, in my opinion, are liable to be misled. The judges have awarded to my ventilating exhibits a bronze medal for exhaust ventilators, but if any higher award has been given for *exhaust* ventilators *per se* to any other exhibitor, I beg to openly protest against it.

I am, &c.,

W. P. B.

"ARCHITECT," Nov. 29.

SIR,—We observe in your issue of this week that our statements with respect to the non-invitation of certain exhibitors of ventilators to the testing, and the farcical nature of the tests, are fully corroborated by other exhibitors who were also *not invited* to the tests. On the face of this, how can it be asserted, as it is, that *all* were *invited*?

The more light that is thrown on this lamentable fiasco shows but all the more conclusively that there has been, to put it mildly, sad mismanagement somewhere, and it is only right, seeing that this is a public matter, that the public should know who is responsible for it, and also that measures should be promptly taken to secure the rectification of the blunder which has been committed, otherwise a lasting reproach will not only rest upon the conduct of Jury 10 and their testing engineer, but upon the Health Exhibition itself, and an injury will be done to the cause of sanitary science by bringing it into ridicule and contempt with the public, that will take many years to eradicate.

As showing the opinion of the press on the matter, we beg to give an extract from a lengthy "leader" which appears in this week's *Health*, by the editor, Dr. Andrew Wilson, F.R.S. :—

"In view of the remarks of Messrs. Boyle & Son, published in our present issue, it would appear that some strange mismanagement has overtaken the jury which decided the "Ventilation" awards at the Health Exhibition. If, as Messrs. Boyle say, their well-known ventilators were not included in the list of apparatus tested, and if their position as competing exhibitors has thus been practically ignored, we certainly feel entitled, in the interests of "fair play and no favour," to ask for an explanation of these anomalies. We approve of the demand of Messrs. Boyle not only on account of the alleged grievance of that firm alone, but of all other firms who have competed in the section alluded to, whether they have received awards or not. No firm of inventors can have the slightest satisfaction in receiving any award the fairness and impartiality of which can be called in question. We are certain, therefore, that we only re-echo public sentiment and professional opinion when we ask that such a matter as that to which attention is being directed should be fully investigated. If exhibitions and their juries do not obtain the confidence of the public, the main stay of these institutions is at once sapped and destroyed."

A leading London editor, writing us on the subject, expresses his surprise at such "hankey-pankey doings in an exhibition that is royal, and should be loyal," and says "if exhibitions are to be conducted in that way it would be wiser to stop them."

A correspondent who signs himself "An Architect" says: "It is to be regretted that gentlemen more practically scientific were not appointed to adjudicate on ventilators at the Health Exhibition." And he further asks, referring to the tests, "Could any greater farce, in the name of Science, be enacted?" All that we can say in reply to this query is, "Time will show." We believe, after what we have seen, that anything is possible in these days.

Yours, &c.,

ROBERT BOYLE & SON.

64 Holborn Viaduct, Nov. 22, 1884.

"ARCHITECT," Nov. 29.

SIR,—I am glad to observe a correspondence going on in your valuable columns respecting the value of the tests made with ventilators at the late Health Exhibition, as I think the question is one the discussion of which will be of value to the public, as tending to show the unreliability of all such tests and their misleading nature.

I consider that all such so-called scientific experiments which have been, or may be, instituted, can no more demonstrate satisfactorily the relative value of different cowls than they can prove that a plain open pipe is better than a pipe with a cowl on the top of it, and for the following among many reasons that might be given, viz.: within these last seven years I have seen the accounts of at least a score of testings, conducted by different individuals and scientific bodies, and upon comparing the figures given I find that in no two cases do the results agree. A ventilator that in one table of figures is shown as being very powerful and free from down-draught, in other tables is put down as very feeble and subject to strong down-draughts, and ventilators that appear in the first table as practically useless are shown in other tables as highly efficient. The notorious "Kew" experiments, and those now under discussion, are striking instances of what I describe. Now, the important question arises, which of all those conflicting tables is to be accepted as correct, and how is it to be *proved* that the one selected is the *correct one*? I leave this problem for your readers to solve, as I have utterly failed in the attempt myself.

Yours, &c.,

SCPTIC.

"ARCHITECT," Dec. 5.

SIR,—Seeing that Mr. Clark has not accepted our invitation to publish in your columns the letter which he says was sent to us inviting us to send our ventilator to be tested, or the one he states he received from us declining to comply, it can only be inferred that he is unable to substantiate his statements by the production of these letters. We have already affirmed that we were not invited to submit our air-pump ventilator, or any exhaust ventilator that we make, for the purpose of being tested, or that we decline to comply with such an invitation. This we adhere to, and no proof has been furnished, though specially invited, to show that we are in error. As to the mode of conducting and value of the experiments in question, your readers, from the mass of evidence which has now been submitted, will be able to form their own opinions.

Thanking you for the courtesy you have shown us in inserting our letters in your valuable columns,

We are, yours truly,

ROBERT BOYLE & SON.

64 Holborn Viaduct, November 29, 1884.

The following extracts are from editorials which appeared

in the *Architect*, November 1st, on "Cowl Testing," and December 6th on "Awards to Ventilators" :—

COWL TESTING.

Presuming that the tests were intended to fulfil the object in view it would be absolutely necessary that they should extend over a period of at least twelve months, in order that the cowls might be tried under all conditions of the weather. It is well known to those acquainted with the subject that there are what may be called fair-weather cowls. It would be obviously unfair to test a cowl which is at its best in summer and autumn, but is less efficient in cold and stormy weather, against one which was devised to contend with the most trying atmospheric conditions. To be equitable a test should be conducted throughout an entire year. * * *

It is well known that position has much to do with the efficiency of a cowl. It has been often found that a ventilator which acted indifferently in one situation, when removed to another worked well; whilst another ventilator which was found to fail in many situations, when applied to the first building answered admirably, the existing conditions evidently being favourable for its action. * * *

All tests should be open to the inspection of the public and the patentees of the cowls, so that they may be enabled to judge of the pressure as well as of the correctness of the tests. When private interests are at stake secret transactions are always liable to suspicion. Where everything is fair and above board there should be no fearing or shirking public examinations. * * *

AWARDS TO VENTILATORS.

The disappointment that has arisen in connection with the latest attempt to prove the relative value of ventilating cowls, by means of so-called scientific tests, is an illustration of the correctness of the opinions expressed by us in the article on "Cowl Testing," which appeared in the *Architect* of the 1st ultimo.

It would appear from the description given of the *modus operandi*, by those who witnessed the proceedings, that the arrangements were of such a nature as to be almost incredible. * * *

What we wish to draw attention to is the great injury which is likely to be inflicted on the cause of sanitary science by proceedings of the character of those in question, as they undoubtedly do more to nullify the endeavours which are being made to force the importance of ventilation on the public, than anything else that could well be imagined. * * *

As we have already endeavoured to explain, all cowls do not act alike in certain situations or in certain seasons of the year. Because the situation and season in which the cowls are tested happens to suit one better than its rivals, that cowl should not be proclaimed to the world as the best until it has been tried under different circumstances. This suitability to one set of conditions is a common experience. * * *

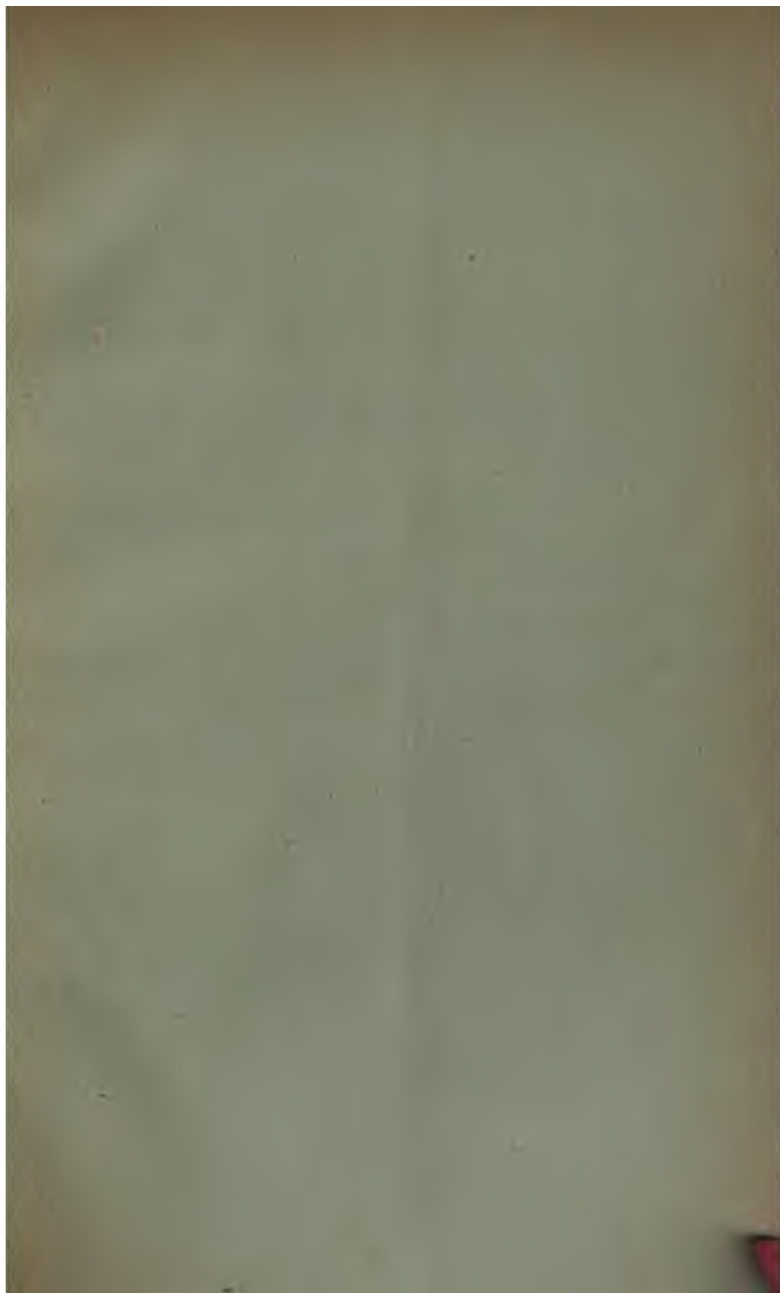
Such a misunderstanding of the subject could not be surpassed. * * *

It is understood that the Sanitary Institute is again, after a lapse of fully six years, conducting experiments; but it is to be feared that, when they are completed and the results made public, they will only go to increase the injury which has been done by the first attempt. But whatever may be the result, it cannot be more injurious than the "testing" at the late Health Exhibition, which has already become a subject for derision. * * *

Unless the tests were of a kind that could not be impugned, it is unwise for a jury to interfere with the business of any class of manufacturers. Trade has a marvellous way of adjusting itself. The best ventilator will readily demonstrate its superiority without extraneous aid. The public are sufficiently alive to their own interests to know when a thing suits them, and answers its purpose, and when it does not. The best cowl will have the largest sale, and the worst the smallest. It may be relied upon that the cowl for which there is the largest demand, and which has been shown to be successful under the most trying and varied conditions, will be found to be the best cowl.

If such experiments as those under review were to be accepted as conclusive, an unprofitable cowl knocked together by some tinsmith might happen to suit the peculiar conditions of Moreton Gardens, and be declared the victor over the heads of cowls that had been years before the public, thoroughly tested and proved to be good, and in favour of which the highest testimony was furnished. It would be absurd to suppose that such an experiment is to be accepted as nullifying all the successes which may have been achieved by the other cowls in actual practice. * * *

Right nowadays in this country at last triumphs over might, and time tests all things, and it may safely be accepted as correct that the ventilator which constantly proves itself to be efficient wherever used, and which successfully stands the test of time, is certain to be a good and reliable one, and all the experiments in the world, whether showing in favour of or against it, would not alter its action or make it better or worse.



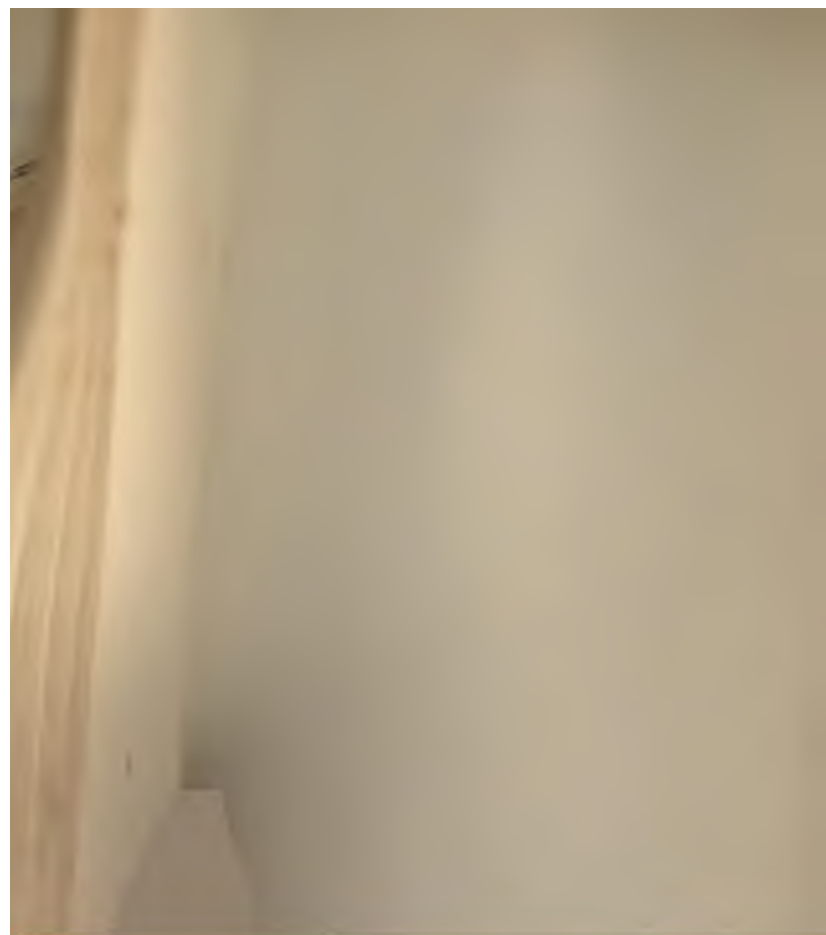


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